

Search Response 19 SE 2004

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:  
LALITA W. PACE  
1303 EAST ALGONQUIN ROAD  
SCHAUMBURG, IL 60196

AUG 24 2004  
IF NO RESPONSE IS NEEDED  
PLEASE INITIAL *W* DATE *8/21/04*  
RETURN TO CAROL

PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing  
(day/month/year) 19 AUG 2004

Applicant's or agent's file reference  
CML00596JC AKITA

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.  
PCT/US04/02614

International filing date  
(day/month/year) 30 January 2004 (30.01.2004)

Applicant  
MOTOROLA, INC.

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.  
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/ US  
Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
Facsimile No. (703) 305-3230

Authorized officer

Betsy L. Deppe

Telephone No. (703) 305-4700

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference CML00596JC	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US04/02614	International filing date ( <i>day/month/year</i> ) 30 January 2004 (30.01.2004)	(Earliest) Priority Date ( <i>day/month/year</i> ) 31 January 2003 (31.01.2003)
Applicant MOTOROLA, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

#### 1. Basis of the Report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (See Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/02614

## Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

### NEW ABSTRACT

To provide high-quality communication even when the power for synchronization preamble is reduced in an OFDM communication system, an OFDM communication transmitter obtains a zero amplitude reduced preamble signal by passing a specified synchronization preamble through an ideal low-pass filter (10) to reduce a signal component near zero amplitude within a time domain and time-multiplexes (11) the obtained zero amplitude reduced preamble signal with transmit data to generate an OFDM transmit signal. A receiver section (20) of the OFDM communication system determines the cross correlation (19) between a receive signal and a specified synchronization preamble (17), which is patterned the same as the counterpart in a transmitter section of the OFDM communication system, and detects a synchronization position in accordance with the determined cross correlation.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/02614

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : H04L 27/28; H04K 1/10

US CL : 375/260; 370/210

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 375/222, 260, 295, 354, 365, 368; 370/208, 210

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2001/0022810 A1 (JOO) 20 September 2001 (20.09.2001), entire document.	1-10
A	US 6,381,251 B1 (SANO et al) 30 April 2002 (30.04.2002), Figures 1 and 6.	5-10
A, P	US 6,658,063 B1 (MIZUGUCHI et al) 02 December 2003 (02.12.2003), Figure 1.	5-10



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;"

document member of the same patent family

Date of the actual completion of the international search

21 July 2004 (21.07.2004)

Date of mailing of the international search report

19 AUG 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

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Authorized officer

Betsy L. Deppe

Telephone No. (703) 305-4700

# INTERNATIONAL SEARCH REPORT

PCT/US04/02614

## Continuation of B. FIELDS SEARCHED Item 3:

EAST (USPAT: USPGPub; JPO; EPO; Derwent)

OFDM or multicarrier or multitone or DMT: low pass filter; synchronization; correlat\$4; preamble

# INTERNATIONAL COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
LALITA W. PACE  
1303 EAST ALGONQUIN ROAD  
SCHAUMBURG, IL 60196

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) **19 AUG 2004**

Applicant's or agent's file reference

**FOR FURTHER ACTION**

See paragraph 2 below

CML00596JC

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US04/02614

30 January 2004 (30.01.2004)

31 January 2003 (31.01.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): H04L 27/28; H04K 1/10 and US Cl.: 375/260; 370/210

Applicant

MOTOROLA, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US

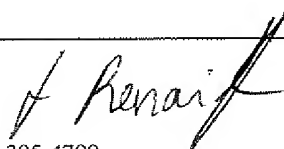
Mail Stop PCT, Attn: ISA/US  
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Authorized officer

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/02614

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US04/02614

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims 1-10 YES

Claims NONE NO

Inventive step (IS)

Claims 1-10 YES

Claims NONE NO

Industrial applicability (IA)

Claims 1-10 YES

Claims NONE NO

2. Citations and explanations:

Claims 1-10 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest an OFDM communication system comprised of a transmitter for obtaining a zero amplitude reduced preamble signal by passing a specified synchronization preamble through an ideal low-pass filter to reduce a single component near zero amplitude within a time domain, and generating an OFDM transmit signal by time-multiplexing the obtained zero amplitude reduced preamble signal with transmit data.

Claims 1-10 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/02614

**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

The drawings are objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or content thereof: Figures 5 and 9 should be labeled as "PRIOR ART"; the table recited in claims 3, 4 and 9 is not shown in the figures.

Claims 1-10 are objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or contents thereof:

in line 1 of claims 1-10, "OFDM communication device" should be "OFDM communication system";

in claim 1, line 2, "a transmitter" should be "the transmitter";

claim 7 is a substantial duplicate of claim 5/1;

claim 8 is a substantial duplicate of claim 5/2;

claim 9 is a substantial duplicate of claims 5/3 and 5/4;

claim 10 is a substantial duplicate of claim 6/5/1.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/02614

**Box No. VIII** Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the questions whether the claims are fully supported by the description, are made:

Claim 9/8 is objected to as lacking clarity under PCT Rule 66.2(a)(v) because of the claim 9 is not fully supported by the description. The description does not disclose the claimed invention in a manner sufficiently clear and complete for the claimed invention to be carried out by a person skilled in the art because: the description does not describe how the OFDM transmitter uses a table and the FFT and zero substitution sections together to form an ideal low-pass filter.

Claims 1-6 and 9 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims 1-6 and 9 are indefinite for the following reason(s):

with regard to claims 1-6, claim 1 appears to be a preamble without a transition word (e.g. "comprising") and recited limitations thereby rendering the vague and indefinite;

with regard to claims 3, 4 and 9, it is unclear what is stored in the table, i.e. it is unclear what is meant by "values obtained when input signals pass through said ideal low-pass filter in accordance with the values of the input signals." Furthermore, it is unclear how the table relates to the input and output of the ideal low-pass filter; and

with regard to claim 9/8, it is unclear how the table relates/interfaces with the FFT section and zero substitution section recited in claim 8.